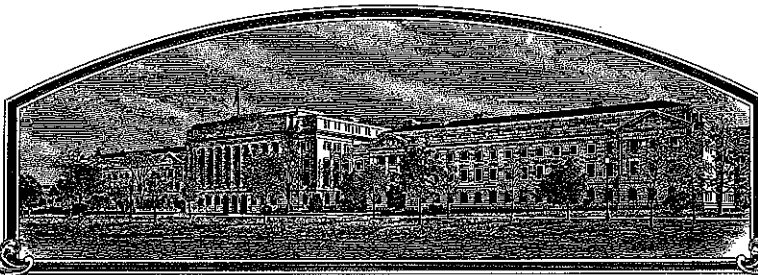


No.

200600232



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

North Carolina State University

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR PROPAGATING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE FOREGOING PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMERICAL GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

OAT

'Caballo'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this sixth day of December, in the year two thousand and six.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture



U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER STATE UNIVERSITY MAH 10/11/06 North Carolina Agricultural Research Service		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME NC98-197N	3. VARIETY NAME Caballo
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) Box 7643, N.C. State University Raleigh, NC 27695-7643		5. TELEPHONE (include area code) (919) 515-2818	FOR OFFICIAL USE ONLY PVPO NUMBER 200600232 FILING DATE JULY 10, 2006
		6. FAX (include area code) (919) 515-7745	
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) State Government Agency	8. IF INCORPORATED, GIVE STATE OF INCORPORATION	9. DATE OF INCORPORATION	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Dr. Paul Murphy Department of Crop Science, Box 7629 N. C. State University Raleigh, NC 27695-7629			F E E S R E C E I V E D FILING AND EXAMINATION FEES: \$ 4,382.00 DATE 7/10/06 CERTIFICATION FEE: \$ 768.00 DATE 10/4/2006
11. TELEPHONE (Include area code) (919) 513-0000	12. FAX (Include area code) (919) 515-5657	13. E-MAIL paul Paul_murphy@ncsu.edu	
14. CROP KIND (Common Name) Winter Hulless Oat	16. FAMILY NAME (Botanical) Poaceae	18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (OPTIONAL) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERCIALIZATION.	
15. GENUS AND SPECIES NAME OF CROP Avena sativa	17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input checked="" type="checkbox"/> YES (If "yes", answer items 21 and 22 below) <input type="checkbox"/> NO (If "no", go to item 23)	
19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Exhibit F. Declaration Regarding Deposit g. <input checked="" type="checkbox"/> Voucher Sample (3,000 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) h. <input checked="" type="checkbox"/> Filing and Examination Fee (\$4,382), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)		21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED	
23. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)		22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.)	
24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)			

25. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Owner(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF OWNER Daryl T. Bowman	SIGNATURE OF OWNER
NAME (Please print or type) DARYL T. BOWMAN	NAME (Please print or type)
CAPACITY OR TITLE Manager, NCF&PI	CAPACITY OR TITLE
DATE 6/28/06	DATE

(See reverse for instructions and information collection burden statement)

GENERAL INSTRUCTIONS: To be effectively filed with the Plant Variety Protection Office (PVPO), ALL of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E, F; (3) for a tuber reproduced variety, verification that a viable (in the sense that it will reproduce an entire plant) tissue culture will be deposited and maintained in an approved public repository; and (4) payment by credit card or check drawn on a U.S. bank for \$4,382 (\$518 filing fee and \$3,864 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice). **NEW:** With the application for a seed reproduced variety or by direct deposit soon after filing, the applicant must provide at least 3,000 viable untreated seeds of the variety *per se*, and for a hybrid variety at least 3,000 untreated seeds of each line necessary to reproduce the variety. Partial applications will be held in the PVPO for not more than 90 days; then returned to the applicant as un-filed. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a payment by credit card or check payable to "Treasurer of the United States" in the amount of \$768 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. The fees for filing a change of address; owner's representative; ownership or assignment; or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

Plant Variety Protection Office
Telephone: (301) 504-5518 **FAX:** (301) 504-5291
General E-mail: PVP@mail.usda.gov
Homepage: <http://www.ams.usda.gov/science/pvpo/PVPindex.htm>

SPECIFIC INSTRUCTIONS:

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and **provide evidence** that the permanent name of the application variety (even if it is a parental, inbred line) has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: U.S. Department of Agriculture, Agricultural Marketing Service, Livestock and Seed Programs, **Seed Regulatory and Testing Branch**, 801 Summit Crossing Place, Suite C, Gastonia, North Carolina 28054-2193 Telephone: (704) 810-8870. <http://www.ams.usda.gov/lsg/seed.htm>.

ITEM

- 19a. Give:
- (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
 - (2) the details of subsequent stages of selection and multiplication;
 - (3) evidence of uniformity and stability; and
 - (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
- (1) identify these varieties and state all differences objectively;
 - (2) attach replicated statistical data for characters expressed numerically and demonstrate that these are clear differences; and
 - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
20. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
23. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
24. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

22. CONTINUED FROM FRONT (Please provide a statement as to the limitation and sequence of generations that may be certified.)

23. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

24. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

Exhibit A.
Origin and Breeding History
Caballo Oat

Pedigree:

Caballo, formally designated NC98-197N has the pedigree NC88-1756 // ARFOB-30 / Coker 84-27. The final cross was made in the greenhouse at North Carolina State University (NCSU) during the winter of 1991-92.

NC88-1756 is a winter oat breeding line with the pedigree Coker 80-33 / NC81-376. It is a full-sib of the hulled cultivar 'Rodgers' (PI 593020) (Murphy et al. Crop Sci. 37:1017 1997). It exhibited high yield and test weight, but was never released as a variety.

ARFOB-30 is an experimental line of unknown parentage developed by the University of Arkansas. It was never released as a cultivar.

Coker 84-27 is a hulless winter oat line with the pedigree Coker 69-20 / Coker 70-12 // Coker 76-19 /3/ Coker 76-16 // Coker 77-18 / CIav 3031. CIav 3031, the source of the hulless trait, is a spring oat introduction from Zimbabwe.

Selection and Multiplication:

Caballo was developed using a combination of the mass selection and pedigree breeding methods. F₂ seed from the three-parent cross was planted in a single 11.1 m² plot at the Central Crops Research Station, Clayton, North Carolina in fall 1994. The F₂ population contained approximately 1700 seeds. Approximately 80 panicles were selected from the

population based on desired plant height, large panicle size, and a white or golden color in June 1995. Selected panicles were threshed and a bulk of F_3 seed was planted at Clayton in fall 1995 following the same field protocols. Following harvest in June 1996, panicles were threshed separately and $F_{3:4}$ panicle rows were planted at the Cunningham Research and Education Center, Kinston, NC in fall 1996. Selection in panicle-rows was based on winter survival, time of head emergence, plant height, straw strength and overall plant vigor. This protocol was repeated during the 1996-97 season on $F_{4:5}$ panicle-rows and during the 1997-98 season on $F_{5:6}$ panicle rows. A single $F_{5:6}$ panicle-row selection, designated NC98-197N, was harvested in June 1998.

Observed Characters:

Caballo was evaluated in replicated multilocation trials during the 2002-03 through 2004-05 seasons. Eight location-years of data from the North Carolina Official Oat Variety Test grown in the 2003-04 and 2004-05 seasons indicated Caballo had a significantly greater grain yield than 'NC-Hulless' the only commercially available hulless variety for North Carolina producers (Table 1). Caballo produced 82 to 86% of the yield of the hulled varieties 'Brooks' 'SS76-40', and 'Rodgers'. This was a very competitive yield because the hull comprises approximately 27% of the grain weight in a hulled variety. Caballo had a test weight similar to NC-Hulless and was significantly superior to the three hulled varieties. Caballo was significantly earlier in heading date than NC-Hulless and the three hulled varieties. There were no significant differences among entries for plant height or lodging. Data from Rowan County in 2004-05 indicated that Caballo had a significantly higher winter survival than NC-Hulless and was equal to that of Brooks.

Five location-years of data from the small grains breeding program collected over three seasons indicated that Caballo had a significantly greater grain yield than 'NC-Hulless' (Table 2). Caballo produced 86 to 95% of the yield of the hulled varieties Brooks, SS76-40, and Rodgers. Caballo had a test weight similar to NC-Hulless and significantly superior to the three hulled varieties. Caballo was two days earlier in head emergence than NC-Hulless and Rodgers, and three days earlier than SS 76-40 and Brooks. Caballo had a significantly shorter plant stature when compared to the other four cultivars. Data from Rowan County in 2004-05 indicated that Caballo had a significantly better winter survival than NC-Hulless and was equal to that of Brooks.

Caballo was entered in the USDA-ARS coordinated Uniform Winter Oat Yield Nursery during the 2003-04. Based on data from 12 locations collected in 10 states Caballo yielded 81% of the mean of the hulled varieties Rodgers and 'Harrison' (Table 3). Caballo had a significantly higher test weight than the hulled varieties. The groat percentage of Caballo was 89% in comparison to a mean of 71% for the hulled varieties. Groat yields for all three varieties were similar. Both the groat protein and groat lipid contents of Caballo were similar to those of Rodgers, and significantly greater than those of Harrison. The groat β -glucan content of Caballo was significantly lower than that of the hulled varieties. Caballo was susceptible to crown rust (caused by *Puccinia coronata* Cda. f. sp. *avenae* Eriksson) in the Gulf Coast states (data not shown).

Caballo was entered in the USDA-ARS coordinated Uniform Winter Oat Yield Nursery during the 2004-05. Based on data from eight locations collected in seven states Caballo yielded 103% of the mean of the hulled varieties Rodgers and 'Harrison' (Table 4).

Caballo had a significantly higher test weight than the hulled varieties. The groat percentage of Caballo was 90% in comparison to a mean of 66% for the hulled varieties. The groat yield of Caballo was 41% greater than that of Rodgers and Harrison. The groat protein content was similar for hulled and hullless varieties, but the groat lipid content of Caballo and Rodgers were higher than Harrison. The groat β -glucan content of Caballo was significantly higher than that of the hulled varieties. Caballo was susceptible to crown rust (caused by *Puccinia coronata* Cda. f. sp. *avenae* Eriksson) in the Gulf Coast states (data not shown).

Caballo was entered in the USDA-ARS coordinated Uniform Oat Winterhardiness Nursery during the 2004-05 season. Based on data from 10 locations in the US, Europe and Southwest Asia Caballo had a similar winter survival rating as the winter hardy check entries 'Norline' and 'Wintok' (Table 5). In Laurel Springs, NC where the highest mean winter killing occurred, Caballo had a significantly lower winter survival than the winter hardy checks.

**Table 1. Performance of Caballo over eight locations in he 2003-04 and
2004-05 NC Official Oat Variety Test.**

Cultivar	Grain Yield bu ac ⁻¹	Test Weight lb bu ⁻¹	Heading date April	Plant Height in	Lodging %	Winter- kill %
(No. Locations)	(8)	(8)	(2)	(2)	(8)	(1)
Caballo (Hulless)	108	38.5	22	37	22	25
NC Hulless	81	37.4	24	36	38	99
Rodgers (Hulled)	132	36.4	24	41	32	10
SS76-40 (Hulled)	131	36.3	25	37	14	4
Brooks (Hulled)	125	35.1	24	40	44	22
Horizon 321	125	37.1	27	37	17	20
Horizon 474	123	37.4	21	38	20	13
NC99-3802	127	36.2	18	36	33	77
NC97-8972N	83	40.4	25	35	22	83
Mean	115	37.2	23	37	25	35
LSD (0.05)	17.0	2.1	2	ns	ns	18
CV%	6.3	2.7	0.5	4.8	29.8	29.3

**Table 2. Performance of Caballo based on NCSU small grain breeding
project data 2003, 2004 and 2005.**

	Grain Yield bu/ac	Test Weight lb/bu	Heading date April	Plant Height in	Freeze Damage 0-9
(No. Locations)	(5)	(5)	(3)	(3)	(1)
CABALLO	139.5	44.8	21	44	4.3
NC-HULLESS	100.2	42.2	23	49	7.4
RODGERS	163.1	36.6	23	52	3.0
SS 76-40	152.7	36.2	24	49	2.9
BROOKS	146.8	34.6	24	52	4.4
Mean	140.0	39.1	23	49	4.4
LSD (0.05)	29.1	4.0	2	2	1.0
CV%	12.1	6.0	1.2	1.7	21.9

Multiplication, Purification and Variants:

Twenty F_{8:9} panicle selections were grown during the 2000-01 season and a single uniform panicle-row that was true-to-type was harvested to produce breeder seed. This material underwent seed increase during the 2001-02 and 2002-03 and 2003-04 seasons. In fall 2004, approximately 30 pounds of F_{8:12} seed was transferred to the North Carolina Foundation Seed Producers, Inc. Although Caballo has remained uniform and stable in composition since 2001, the Breeders seed increase fields in 2002, 2003, and 2004 contained up to 0.25% plants 10-15cm taller than Caballo and up to 0.1% plants with awned spiklets. Depending upon the growing environment, grain moisture at harvest and combine threshing calibration, threshed seed lots of Caballo may contain over 50% hulled grains.

The 10-15cm taller plants and the awned plants are variants.

MAH 09/09/2006
per letter of
August 24, 2006

Table 3. Performance of CABALLO in the USDA-ARS Uniform Winter Oat Yield Nursery 2003-04

	Grain Yield bu/ac	Test Weight lb/bu	Groat Percentage %	Groat Yield bu/ac	Heading Date Julian	Plant Height cm	Groat Protein %	Groat B-glucan %	Groat Lipid %
(No Locations)	(12)	(12)	(6)	(12)	(8)	(10)	(6)	(6)	(6)
Rodgers	123	31.9	71.2	88	108.9	97	17.58	5.78	7.67
TAM-O-397	106	30.2	67.4	71	104.4	96	17.80	5.28	6.74
Harrison	122	34.1	71.6	87	106.0	98	15.78	5.85	6.02
ARO213-3	113	30.4	70.2	79	112.9	78	15.30	6.84	8.09
ARO258-7	123	34.3	68.5	84	112.0	78	18.22	7.11	8.75
ARO231-3	126	33.4	69.1	87	109.7	83	16.72	6.78	8.50
ARO289-9	125	34.1	69.5	87	109.4	100	15.38	6.33	7.97
ARO336-3	116	32.3	70.1	81	109.5	97	16.24	6.11	8.55
FL9708-P10	117	34.0	70.5	83	109.4	95	16.28	5.09	9.41
FL9708-P37	121	34.3	72.4	88	110.2	86	17.29	4.90	7.81
FL9304-Y11-B3-C5	109	32.7	68.0	74	105.1	95	16.15	5.38	7.52
FL9605-Ab-B4	114	33.9	71.4	81	105.7	101	16.69	5.44	7.28
FL98107-C3	119	32.6	70.3	84	109.2	98	15.64	5.47	7.99
FL-TX96M1418-C2	112	32.0	71.7	80	108.9	98	17.70	6.53	8.64
LA966BSB119-1	111	31.1	69.0	77	109.5	94	16.34	5.02	7.89
LA976GBS-22-B-S2	107	33.1	69.0	74	108.2	93	15.67	5.55	7.30
LA989SBS-49-B-S1	105	33.1	73.5	77	110.0	90	15.93	6.35	7.46
LA9810SBS-58	113	34.4	69.8	79	107.6	97	16.21	6.75	7.01
LA9535D84-S-3-2-B-S3	119	31.6	70.5	84	111.1	98	15.41	6.01	8.11
LA976GBI-30-1-C	100	33.9	71.7	72	109.7	105	15.58	5.87	7.75
LA9825SBSB-59-C	114	33.8	75.5	86	108.7	98	16.18	5.70	8.14
NC99-3802	125	32.1	69.6	87	105.6	90	19.17	7.25	8.43
CABALLO	99	36.7	89.4	88	106.2	88	16.83	5.18	8.44
SC961246	143	32.2	69.0	99	109.4	82	16.01	6.59	7.47
SC96R036	121	32.1	69.5	84	111.1	89	15.71	6.88	8.35
TX00D276	107	32.5	67.1	72	104.4	82	17.41	6.32	9.39
TX00D291	109	32.5	72.4	79	106.4	96	17.52	6.89	8.31
TX01CSRH sel 1	110	32.4	69.1	76	107.2	81	16.85	6.66	7.83
TX02U7344	119	32.1	69.8	83	109.9	92	16.02	6.04	7.78
Mean	115	32.9	70.9	82	108.5	92	16.54	6.06	7.95
LSD (5%)	12.6	1.3	2.9	.	2.1	5	0.93	0.38	0.80
CV (%)	13.6	4.9	3.6	.	2.0	14	4.92	5.48	8.86

Table 4. Performance of CABALLO in the USDA-ARS Uniform Winter Oat Yield Nursery 2004-05

	Grain Yield bu/ac	Test Weight lb/bu	Groat Percentage %	Groat Yield bu/ac	Heading Date Julian	Plant Height in	Groat Protein %	Groat B-glucan %	Groat Lipid %
(No Locations)	(8)	(7)	(2)	(8)	(6)	(8)	(2)	(2)	(2)
Rodgers	111	32.4	66	73	104	46	14.24	4.43	8.13
TAM-O-397	115	32.4	68	78	100	46	15.50	3.81	7.21
Harrison	111	33.6	66	73	103	49	15.60	4.01	6.18
ARO231-3	111	35.0	61	68	107	39	14.66	4.11	9.37
ARO289-9	113	35.0	65	73	105	48	13.91	3.56	7.51
ARO336-3	105	31.0	62	65	106	40	13.30	4.48	9.18
ARO336-12	107	33.5	66	70	108	47	12.34	4.49	8.75
FL9304-Y11-B3-C5	123	34.3	64	79	102	46	15.06	4.36	9.74
FL9605-A6-B4	125	36.4	68	84	101	49	13.60	4.55	8.89
FL98107-C3	128	35.0	66	84	103	46	13.87	3.93	7.35
FL-TX96M1418-C2	125	34.5	66	83	104	47	14.68	3.32	7.82
LA96006BSB-270-S2	137	33.9	57	77	102	40	14.52	4.01	8.09
LA976GBS-22-B-S2	102	36.3	67	68	105	50	14.17	5.04	7.16
LA98001SBSBSB-82-S	94	35.0	65	61	104	45	14.85	3.74	8.00
LA9810SBS-58	129	38.0	67	86	102	46	14.54	4.61	7.14
LA9825SBSB-59-C	133	36.7	72	95	103	46	14.57	3.90	7.26
LA99016SBSB-98-S	132	34.7	68	89	102	48	13.80	3.99	7.67
CABALLO	114	39.3	90	103	101	44	14.90	5.24	8.21
NC01-3981	117	36.5	67	78	103	40	14.40	3.81	7.30
SC010907	86	36.6	85	73	105	47	12.68	4.52	8.79
TX01CSRH sel 1	118	35.0	61	71	98	36	14.87	4.31	6.81
TX02U7097	109	34.0	72	79	99	46	14.43	4.11	9.11
TX02U7344	112	35.0	65	72	104	45	14.02	4.07	8.31
TX02U7605	114	34.7	71	80	96	44	15.02	4.10	7.75
Mean	115	34.95	67	78	103	45	14.31	4.19	7.99
LSD (5%)	24	3.0	6	.	2	2	1.74	0.78	0.74
CV (%)	21	8	4	.	2	5	5.88	9.02	4.50

Table 5. Performance of CABALLO in the USDA-ARS Uniform Oat Winterhardness Nursery 2004-05.
Data represent the percentage plant survival.

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Ent. No.	Entry	Ranked Means	Means (across loc)	Fayetteville	Edelhof Austria	Kromeriz Czech Rep	Matnvasar Hungary	Laurel Spngs NC	Radzikow Poland	Knoxville TN	Eskisehir Turkey	Abswth UK	Blksbrg VA
14	Win/Nor-1	1	83.8	100.0	60.0	66.6	87.0	92.5	53.5	100.0	82.5	97.7	98.5
17	Win/Nor-10b	2	82.9	100.0	67.5	73.7	72.0	72.5	68.5	100.0	77.5	97.7	100.0
21	NC01-3981	3	82.8	100.0	70.0	58.7	86.0	47.5	74.0	100.0	95.0	96.9	100.0
11	AR0213-10	4	79.4	100.0	75.0	57.6	76.5	47.5	69.0	100.0	80.0	90.9	97.5
4	Wintek (ek)	5	76.7	100.0	30.0	69.7	94.0	77.5	32.0	100.0	67.5	95.8	100.0
9	AR0213-12	6	76.7	100.0	90.0	41.3	69.5	35.5	53.0	100.0	82.5	95.3	100.0
5	AR0336-3	7	76.4	100.0	40.0	56.4	90.5	47.5	73.0	100.0	90.0	73.9	92.5
20	NC01-3908	8	75.9	70.0	82.5	41.8	85.0	47.5	49.0	100.0	87.5	95.6	100.0
15	Win/Nor-10	9	74.1	100.0	30.0	69.0	77.0	55.0	40.5	100.0	75.0	94.2	100.0
16	Win/Nor-10a	10	73.6	62.5	50.0	54.3	78.5	97.5	49.5	100.0	47.5	96.5	100.0
6	AR0289-9	11	73.4	100.0	12.5	33.7	83.5	67.5	61.5	100.0	87.5	92.8	95.0
13	ARNO-7	12	72.6	100.0	75.0	47.0	78.0	5.5	38.5	100.0	91.0	100.0	91.5
12	ARNO-10	13	71.3	100.0	57.5	28.8	82.5	5.0	52.0	100.0	87.5	100.0	100.0
18	CABALLO	14	71.3	100.0	50.0	41.6	93.0	0.5	42.0	100.0	93.5	97.0	95.0
2	Notline (ek)	15	71.1	100.0	0.0	29.8	100.0	75.0	100.0	100.0	6.0	100.0	100.0
7	AR0231-3	16	66.9	70.0	72.5	27.5	93.5	0.5	55.0	100.0	55.0	97.7	97.5
8	AR0336-12	17	64.1	60.0	60.0	17.0	81.0	1.0	53.5	100.0	87.5	96.3	85.0
10	AR0336-1	18	63.1	100.0	35.0	14.3	70.0	2.5	44.0	100.0	82.5	100.0	82.5
19	NC99-3802	19	60.2	80.0	35.0	3.3	84.0	0.0	37.5	95.0	95.0	84.8	87.5
3	Winter Turf (ek)	20	50.9	100.0	0.0	18.1	100.0	5.0	EST=38.4#	50.0	0.0	100.0	97.5
1	Fulghum (ek)	21	39.8	100.0	0.0	5.2	88.5	0.0	24.5	10.0	11.5	93.2	65.0
Average			71.2	92.5	47.3	40.7	84.3	37.3	52.8	93.1	70.6	95.1	94.5
LSD (0.05)			33.3		20.1	11.7	17.4	53.6	22.7	25.8	30.4	12.0	5.5
CV(%)			18.9		20.4	13.8	9.9	68.9	20.3	13.3	20.6	6.1	2.8

Estimated value. No germination.

200600232

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Exhibit B.
Statement of Distinctness
Caballo Oat.

Caballo oat is uniquely different from all known cultivars. In comparison to oat cultivars with which it has been evaluated, Caballo is most similar to NC-Hulless (PI 619101) because it has the multiflorous spikelet and loose lemmas and paleas characteristic of a hulless oat. However, Caballo has an earlier heading date than NC Hulless (Table 6).

Table 6. Two trials for comparison of heading date evaluated at Kinston NC during the 2004-05 and 2001-02 seasons. Analyses on normally distributed data using the Proc GLM procedure of the SAS software

Kinston Official Variety Test 2004-05				
	Heading		Trial	Comparison
Variety	Date	Range	Plant No.	Plant No.
	April			
Caballo	21	20-21	>1000	>1000
NC-Hulless	24	23-25	>1000	>1000
LSD (0.05)	2			

Kinston Oat Advanced Test 2003-04				
	Heading		Trial	Comparison
Variety	Date	Range	Plant No.	Plant No.
	April			
Caballo	23	0	>1000	>1000
NC-Hulless	25	124-125	>1000	>1000
LSD (0.05)	1			

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 051-0055. The time required to complete this information collection is estimated to average 1.5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

Exhibit C

OBJECTIVE DESCRIPTION OF VARIETY
Oat (*Avena spp.*)

NAME OF APPLICANT (S) N.C. Agricultural Research Service	TEMPORARY OR EXPERIMENTAL DESIGNATION NC98-197N	VARIETY NAME Caballo
ADDRESS (Street and No. or RD No., City, State, Zip Code, and Country) Box 7643, Patterson Hall, N. C. State University, Raleigh NC 27695-7643		FOR OFFICIAL USE ONLY PVPO NUMBER 200600232

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (i.e. or) when the number is either 99 or less or 9 or less.

1. SPECIES:

1 = Sativa

2 = Byzantina

3 = Other (Specify) _____

2. GROWTH HABIT:

1 = Winter

2 = Semi-Winter

3 = Spring

Juvenile Growth:

1 = Prostrate

2 = Semi-Prostrate

3 = Erect

3. MATURITY: (50% Flowering)

Number of days

No. Days Earlier Than

* Rodgers (Table 3)

Same as Check

* Harrison (Table 3)

No. of Days Later Than

* None

Season:

1 = Very Early (Jaycee) 2 = Early (Nodaway 70) 3 = Mid-Season (Clintford)
4 = Late (Lodi) 5 = Very Late (Gerry) 6 = Extremely Late (Mackinaw)

4. PLANT HEIGHT: (From Soil Level to Top of Head)

cm Tall

cm Shorter Than

* Rodgers (Table 3)

Same as Check

* None

cm Taller Than

* None

* Relative to a Commercial Variety Grown in the Same Trial

5. STEM:

Diameter: 1 = Fine (Kherson) 2 = Medium (Clintford) 3 = Coarse (Nodaway 70)
 Hairiness at Upper Culm Nodes: 1 = Hairless 2 = Hairy
 Mature Stem Color 1 = Yellow 2 = Reddish

6. LEAF: (Leaf Color: The Royal Horticultural Society's or any recognized color chart should be used to determine the leaf color of the described variety.)

Carriage: 1 = Drooping (Random) 2 = Erect (Walken)
 Color: 1 = Yellow-Green 2 = Light Green 3 = Dark Green 4 = Blue-Green **RHS Green Group 137A**
 mm Width (First leaf below flag leaf) Leaf Margin: 1 = Glabrous 2 = Ciliate
 Ligule: 1 = Absent 2 = Present Leaf Sheath: 1 = Hairless 2 = Hairy

7. HEAD:

Panicle Shape: 1 = Equilateral 2 = Intermediate 3 = Side Panicle (Unilateral)
 Attachment of Lower Whorl of Branches: 1 = First Node 2 = Second Node (False Node)
 Panicle Size: 1 = Small (Yancey) 2 = Medium (Walken) 3 = Large (Markton)
 Panicle Width: 1 = Narrow (Gopher) 2 = Midbroad (Yancy) 3 = Broad (Nodaway 70)
 cm Panicle Length Number of Branches Number of Whorls of Branches
 Position of Branches: 1 = Ascending (Yancey) 2 = Spreading (Cayuse) 3 = Drooping (Markton)
4 = Pectinate (White Tarter) 5 = Confused (Storm King)

8. RACHIS:

1 = Recurved (Yancey) 2 = Erect (Walken) mm Second Floret Rachilla Segment Length
 Second Floret Rachilla Segment: 1 = Hairless Rachilla Hairs: 1 = Short 2 = Long
2 = Hairy

9. SPIKELET:

Spikelet Separation by: 1 = Abscission 2 = Semi-Abscission 3 = Fracture
 Floret Separation by: 1 = Disarticulation 2 = Heterofracture 3 = Basifracture
 Florets per Spikelet (Mean no.)

10. GLUMES: (Glume Color: The Royal Horticultural Society's or any recognized color chart should be used to determine the leaf color of the described variety.)

mm Width mm Length No. of Veins on Glumes **RHS Greyed-Yellow Group 162A**
Color: 1 = White 2 = Yellow
3 = Red 4 = Striped

11. LEMMA: (Lemma Color: The Royal Horticultural Society's or any recognized color chart should be used to determine the leaf color of the described variety.)

mm Length Color: 1 = White 2 = Yellow 3 = Red
4 = Gray 5 = Black
 Hairiness of Dorsal Surface: 1 = Hairless 2 = Hairy **RHS Greyed-Orange Group 163C**

12. AWN: (First Floret)

Occurrence: 1 = Absent (Walken) Type: 1 = Non-Twisted 2 = Twisted
2 = Infrequent (Yancey) mm Awn Length 3 = Twisted Geniculate
3 = Common (Chilocco)
4 = Frequent (Random)

13. SEED:

☐ 2

Florescence Under Ultraviolet Light:

1 = Florescent

2 = Non-Florescent

☐ 1

Basal Hair:

1 = Absent (Florida 501)

4 = Several to Numerous (Florilee)

2 = Absent to Few (Yancey)

5 = Numerous (Red Rustproof)

3 = Few to Several (Lee)

☐ . ☐

mm Basal Hair Length

☐ 3 ☐ 0 ☐ 1

gms per 1000 Seeds (groats)

☐ 3 ☐ 0

mg Groat Weight (each)

☐ 1 ☐ 6 ☐ 8

% Groat Protein

☐ 0 ☐ 8 ☐ 4

% Groat Oil

14. INSECTS: (0 = Not Tested 1 = Susceptible 2 = Resistant)

☐ 1

Cereal Leaf Beetle

☐ 0

Bluegrass Billbug

☐ 0

Grain Bug (C. Sayi)

☐ 0

Nematode (Type) _____

☐ 0

Green Bug (Biotype) _____

☐

Other (Specify) _____

15. DISEASE: (0 = Not Tested 1 = Susceptible 2 = Resistant)

☐ 0

Halo Blight

☐ 0

Powdery Mildew

☐ 0

Septoria Leaf Blotch

☐ 0

Soil-Borne Mosaic Virus

☐ 0Helminthosporium
Leaf Blotch☐ 1

Yellow Dwarf Virus

☐ 0

Victoria Blight

☐

Other (Specify) _____

Specify Races Tested:

☐ 1

Crown Rust

☐ 0

Stem Rust

☐ 0

Covered Smut

☐ 0

Loose Smut

Races Susceptible	Races Resistant
Complex in SE USA	Not Tested

16. INDICATE THE VARIETY YOU BELIEVE MOST CLOSELY TO RESEMBLE THAT SUBMITTED:

CHARACTER	VARIETY	CHARACTER	VARIETY
Plant Tillering	Rodgers	Leaf Color	Rodgers
Leaf Size	Rodgers	Leaf Carriage	Rodgers
Seed Color	NC-Hullless	Seed Shape	NC-Hullless

COMMENTS:

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426).

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

1. NAME OF APPLICANT(S) <i>State University</i> <i>North Carolina Agricultural Research Service</i> <i>MAH</i> <i>10/11/06</i>	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER NC98-197N	3. VARIETY NAME Caballo
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) Box 7643, Patterson Hall N.C. State University Raleigh, NC 27695-7643	5. TELEPHONE (Include area code) (919) 515-2718	6. FAX (Include area code) (919) 515-7745
7. PVPO NUMBER <i>200600232</i>		

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain.

☒

YES

☐

NO

9. Is the applicant (individual or company) a U.S. national or a U.S. based company? If no, give name of country.

☒

YES

☐

NO

10. Is the applicant the original owner?

☒

YES

☐

NO

If no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

☐

YES

☐

NO

If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☐

YES

☐

NO

If no, give name of country

11. Additional explanation on ownership (Trace ownership from original breeder to current owner. Use the reverse for extra space if needed):

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

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Form Approved OMB NO 0581-0055

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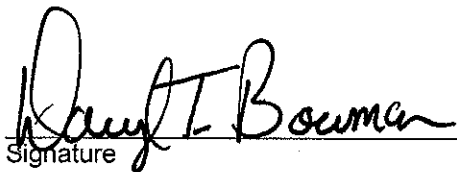
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SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

EXHIBIT F
DECLARATION REGARDING DEPOSIT

NAME OF OWNER (S) North Carolina Agricultural Research Service STATE UNIVERSITY	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) Box 7643, N.C. State University, Raleigh, NC 27695-7643	TEMPORARY OR EXPERIMENTAL DESIGNATION NC98-197N
NAME OF OWNER REPRESENTATIVE (S) Steven Leath	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) Box 7643, N.C. State University, Raleigh, NC 27695-7643	VARIETY NAME Caballo FOR OFFICIAL USE ONLY PVPO NUMBER 200600232

I do hereby declare that during the life of the certificate a viable sample of propagating material of the subject variety will be deposited, and replenished as needed periodically, in a public repository in the United States in accordance with the regulations established by the Plant Variety Protection Office.


Signature

6/28/06
Date

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